

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2420-300369	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/RU 2003/00469	International filing date (day/month/year) 04 November 2003 (04.11.2003)	Priority date (day/month/year) 05 November 2002 (05.11.2002)
International Patent Classification (IPC) or national classification and IPC H01M 8/06, B01J 20/34		
Applicant ZAKRYTOE AKTSIONERNOE OBSHESTVO "INDEPENDENT POWER TECHNOLOGIES" et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This Report consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under PCT).

These annexes consist of a total of _____ sheets

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand: 08 April 2004 (08.04.2004)	Date of completion of this report: 09 November 2004 (09.11.2004)
Name and mailing address of the IPEA/ RU FIPS Russia, 123995, Moscow, G-59 Berezhkovskaya nab., 30-1 Facsimile No.	Authorized officer V. Stankov Telephone No 240-25-91

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International application No.
PCT/RU 2003/000469

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed,
 pages _____, filed with the demand,
 pages _____, filed with the letter of _____
- ☐ the claims:
 pages _____, as originally filed,
 pages _____, as amended (together with statement) under Article 19,
 pages _____, filed with the demand,
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed,
 pages _____, filed with the demand,
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed,
 pages _____, filed with the demand,
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1.(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig. _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive Step (IS)	Claims	1-6	YES
	Claims		NO
Industrial Applicability (IA)	Claims	1-6	YES
	Claims		NO

2. Citations and explanation.

The examination report has been drawn on the basis of the original claims and the following documents with indexing represented in the Search report:

D1 – US 5595949 A
D2 – EP 1155729 A1
D3 – RU 1745312 A1
D4 - EP 0201468 A1
D5 - US 3990912 A
D6 – US 4047894 A
D7 – FR 2290239 A
D8 - JP 63241877

From the document D1 it is known a method for purifying air for fuel cells, wherein the starting air is passed through an adsorber with an adsorbent of carbon dioxide, then the adsorbent is regenerated by heating. The claimed method for purifying air under the claim 1 differs from the document D1 that the adsorbent comprises hydrated oxides of transition metals which are regenerated at a temperature of 60° – 120°C by the air spent in a fuel cell.

From the document D2 it is known a device for purifying air for fuel cells, comprising an air flow blower connected by means of pipelines and a stop valve to adsorbers provided with an adsorbent of carbon dioxide and connected to an air inlet of a fuel cell. The claimed device under the claim 3 differs from the document D2 that the stop valve is made in the form of switches that provide for the sequential connection of the inlet and outlet of one of the adsorbers to the air flow blower and to the air inlet of the fuel cell respectively, and the outlet of the other adsorber through a heater to the air outlet of the fuel cell. The second variant of the claimed device under the claim 4 differs from the document D2 that the adsorbers, separated one from another by partitions, are positioned in one housing with the possibility of rotating about a longitudinal axis and sequentially connecting at an inlet to the air flow blower and at an outlet through a heater to an air outlet of the fuel cell.

From the document D3 it is known a device for purifying air from a carbon dioxide, comprising two lays of adsorbers, consisting of alkali and silica gel. Adsorber regeneration is made by heating.

From the document D5 it is known alkaline fuel cell provided by a device for electrolyte regeneration and removing of a carbon dioxide. From the document D6 is known the method and device for removing of a carbon dioxide from the air by means of a lithium hydroxide.

From the document D8 it is known a device for a carbon dioxide removing from the hydrogen spent in the fuel cell before its feed to a reformer.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Since above mentioned distinctive features are not obvious for a person skilled in the art and allow to obtain a technical result, included in effective purifying of air, supplied in a fuel cell, of a carbon dioxide and providing of fast adsorber regeneration with low energy expenses, the claims 1-6 are novel and involve an inventive step.